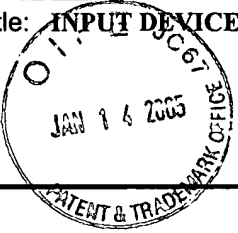


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TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT (Under 37 CFR 1.97(b) or 1.97(c))					Docket No. 14321.29.1	
In Re Application Of: Koichi Kato, et al.						
Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.	
10/728,997	December 5, 2003	Unassigned	022913	2673	9118	
Title: INPUT DEVICE OF 3-D TRANSLATION AND ROTATION AND ITS METHOD AND RECORDING MEDIUM						
<div></div> <div>Address to: Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450</div> <div>37 CFR 1.97(b)</div> <div>1. <input checked="" type="checkbox"/> The Information Disclosure Statement submitted herewith is being filed within three months of the filing of a national application other than a continued prosecution application under 37 CFR 1.53(d); within three months of the date of entry of the national stage as set forth in 37 CFR 1.491 in an international application; before the mailing of a first Office Action on the merits, or before the mailing of a first Office Action after the filing of a request for continued examination under 37 CFR 1.114.</div> <div>37 CFR 1.97(c)</div> <div>2. <input type="checkbox"/> The Information Disclosure Statement submitted herewith is being filed after the period specified in 37 CFR 1.97(b), provided that the Information Disclosure Statement is filed before the mailing date of a Final Action under 37 CFR 1.113, a Notice of Allowance under 37 CFR 1.311, or an Action that otherwise closes prosecution in the application, and is accompanied by one of:</div> <div><div><input type="checkbox"/> the statement specified in 37 CFR 1.97(e);</div><div>OR</div><div><input type="checkbox"/> the fee set forth in 37 CFR 1.17(p).</div></div>						

TRANSMITTAL OF INFORMATION DISCLOSURE STATEMENT
(Under 37 CFR 1.97(b) or 1.97(c))

Docket No.
14321.29.1

In Re Application: Koichi Kato, et al.

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
10/728,997	December 5, 2003	Unassigned	022913	2673	9118

Title: **INPUT DEVICE OF 3-D TRANSLATION AND ROTATION AND ITS METHOD AND RECORDING MEDIUM**

Payment of Fee

(Only complete if Applicant elects to pay the fee set forth in 37 CFR 1.17(p))

- ☐ A check in the amount of _____ is attached.
- ☒ The Director is hereby authorized to charge and credit Deposit Account No. 23-3178 as described below.
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*This certificate may only be used if paying by deposit account.


Signature

Dated: January 14, 2005

ERIC M. KAMERATH

Registration No. 46,081

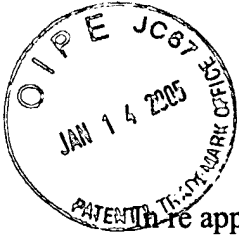
Customer No. 022913

CC:

EXPRESS MAIL LABEL NO.: EV 566 183 413

PATENT APPLICATION

Docket No.: 14321.29.1



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

re application of:

Koichi Kato, et al.

Serial No.: 10/728,997

Filed: December 5, 2003

Confirmation No.: 9118

For: INPUT DEVICE OF 3-D TRANSLATION AND
ROTATION AND ITS METHOD AND
RECORDING MEDIUM

Examiner: Unassigned

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INFORMATION DISCLOSURE STATEMENT
UNDER 37 C.F.R. § 1.97

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Please find, pursuant to 37 C.F.R. § 1.98(a)(1), the enclosed Form PTO-1449 which contains a list of all patents, publications, or other items that have come to the attention of one or more of the individuals designated in 37 C.F.R. § 1.56(c). While no representation is made that any of these references may be "prior art" within the meaning of that term under 35 U.S.C. §§ 102 or 103, the enclosed list of references is disclosed so as to fully comply with the duty of disclosure set forth in 37 C.F.R. § 1.56.

Moreover, while no representation is made that a specific search of office files or patent office records has been conducted or that no better art exists, the undersigned attorney of record believes that the enclosed art is the closest to the claimed invention (taken in its entirety) of which the undersigned is presently aware, and no art which is closer to the claimed invention (taken in its entirety) has been knowingly withheld.

Statement of Relevance of References Listed
Unaccompanied by English Translation
Under 37 C.F.R. § 1.98(a)(3)

In accordance with 37 C.F.R. § 1.98(a)(3), the following concise explanation of the relevance of each listed reference that is not in the English language and unaccompanied by a translation into English is provided.

Japanese Application Publication No. 06/300542:

PURPOSE: To enable the shape change of an object to be easily followed, and allow the three-dimensional measurement thereof to be completed in a short time by obtaining a plane parameter from the three-dimensional position of the object exposed to a laser beam, and using a point for the change of a plane parameter as the feature point of the object.

CONSTITUTION: A laser beam from a two-dimensional laser pattern generator 61 is projected in an arbitrary two-dimensional pattern form. A three-dimensional position measurement device 62 acts to synchronize laser beam emission timing with two-dimensional point detection timing, and calculates the three-dimensional position where the laser beam hits. Furthermore, the device 62 obtains plane parameters determined with the three-dimensional positions of a plurality of points, and compares the plane parameters every time the three dimensional positions are sequentially calculated, thereby determining the number of constitutional planes. Also, a pattern information generator 63 classifies a plurality of the parameters so obtained into the models of constituent planes, and changes a parameter to be projected, depending upon the results of the classification. In addition, a pattern interpretation device 64 detects the shape change of a projection object on the basis of features such as ridges and apexes determined with a plurality of the planes.

Japanese Application Publication No. 07/270124:

PURPOSE: To easily install an object, to be tested, for an imaging-system parameter measurement, to measure and process the object, to be tested, at high speed and to avoid a measuring error or the like being propagated to a processed result.

CONSTITUTION: An image display device 1 which is flat and in which pixels are arranged with high accuracy is installed in front of a visual sensor 2 for an object to be measured.

Thereby, the object to be measured is installed with high flexibility and easily. On the basis of input information from the visual sensor 2, a graphic form on the image display device 1 is changed sequentially, and an imaging-system parameter is computed on the basis of geometric information on an observed graphic form by the visual sensor 2 and on the graphic form displayed on the image display device 1. By means of a purely geometrical computation in this manner, the convergence of a solution, the problem of an initial value and the like are eliminated, and the solution can be found at one blow. In addition, when the image display device 1 is used, the graphic form can be detected by processing only the difference between a plurality of images by an inverting display, a brightness change or the like, the detection accuracy of the graphic form is enhanced, an error is reduced, and the influence of the error on a processed result can be reduced.

Japanese Application Publication No. 08117448: PURPOSE: To provide a shooting game machine capable of playing a shooting game as accurately detecting the target position of a gun directing toward a game screen with simple constitution. CONSTITUTION: This device is a game machine including a game arithmetic part 42 which calculates a game screen for shooting, a raster scanning type display part 12 which displays the game screen, a gun means 20 which shoots a target displayed on the game screen, and a position detecting part which detects the target position of the gun on the game screen. The position detecting part is attached to the gun means, and contains a light receiving part 24 which detects light from a direction toward which the gun is directed, and a position arithmetic part 30 which finds the target position in the horizontal and vertical directions on the screen based on a raster scanning position in the horizontal and vertical directions when the reception of light by the light receiving part is detected as X coordinates and Y coordinates, and decides an X coordinate position based on the raster scanning position in the horizontal direction when the reception of light by the light receiving part after second reception is detected.

Japanese Application Publication No. 08278846: PURPOSE: To provide a three-dimensional data input device capable of inputting three-dimensional information to a computer by a simple operation. CONSTITUTION: A freely rotatable ball body 4, rotation detection sensors 5 and 6 for detecting a rotational amount imparted to the ball body 4 and an angular velocity meter 7 for detecting an angular velocity generated in a mouse main body 3 are provided inside the mouse main body 3. Further, an arithmetic part 2 for generating the displacement amount data of a pointer which in a plane based on the rotational amount detected in the rotation detection sensors 5 and 6 and generating the rotational amount data of the pointer based on the output value of the angular velocity meter 7 is provided and at least one of the displacement amount data and the rotational amount data is outputted to the computer by a prescribed data form.

Japanese Application Publication No. 11219253: PROBLEM TO BE SOLVED: To provide a small-sized, inexpensive and lightweight coordinate input device of a high resolution for suppressing the influence by a disturbing light. SOLUTION: Signals at the time of turning on and turning off of a light spot to flicker with a prescribed cycle by an instruction tool 4 are detected by sensors 20X and 20Y a coordinate detector, difference signals are obtained by separately integrating them in an integration means and the difference signals are inputted to a coordinate computing means 32. Thus, they are digitized with a data width equal to or more than

(n) bits, coordinates are computed and a coordinate value provided with the resolution of the multiple of about the n-th power of 2 of a sensor picture elements number is outputted.

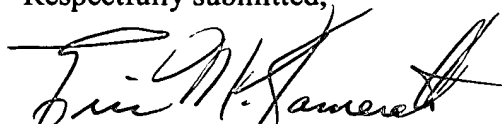
Japanese Application Publication No. 11249806: PROBLEM TO BE SOLVED: To make a user input device for inputting to a computer inexpensive and portable so as to be taken with a hand. SOLUTION: A personal computer 20 has a hand-held device 1, a central processing unit 23, a memory 22, and an input port 21. The hand-held device 1 of the user input device is made adaptive so as to be taken in the user's hand, which is not the user's dominate arm, and provides a digitizer for an instruction using a surface 2 and a stylus 3 and buttons 11, 12, 13, and 14. The digitizer is made adaptive so as to be operated in a first mode for providing the point-and-click control of the interface of a computer system and a second mode for providing a key stroke input. The button 11 provides a switching means between the first and second modes of the digitizer and the buttons 12, 13, and 14 are used for supporting inputs in the point-and-click input made and the key stroke input made.

Article entitled *A Unified Approach to PnP Camera Calibration Problem by Projective Geometry* discloses that a PnP (Perspective n-Point) problem is a problem of determining a position and a posture of a camera during pick-up of an object (n-points), given a corresponding relationship between coordinates on n points in a three-dimensional space and points of an image. Various studies of this problem have been made up to now, but different solutions have been derived because how to grasp the problem and how to treat the problem are individually different, depending upon n and a way of giving n points. In this paper, we will attempt application of projective geometry as a unified mathematical approach to this problem; we will show that the solutions derived up to now can be explained within a framework of this approach, and further give concise solutions to P6P and P4P problems in this paper.

Article entitled *Camera Calibration by Projection of Elliptic Cone Method*, discloses a novel camera calibration method employing a direct, geometrical approach called the projection of elliptic cone (PEC) method. This method is capable of calculating the camera parameters without interactive algorithm. The camera parameters are computed from the geometrical relation between the display unit and the projection center by PEC method. An experiment with a fish-eye lens confirms concept of the proposed method.

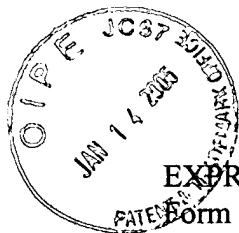
Dated this 14th day of January 2005.

Respectfully submitted,



ERIC M. KAMERATH
Attorney for Applicant
Registration No. 46,081
Customer No. 022913

EMK:ahm
AHM0000000179V001



EXPRESS MAIL LABEL NO.: EV 566 183 413

Form PTO-1449

Sheet 1 of 4

Applicant: Koichi Kato, et al.

Serial No.: 10/728,997

Att'y Docket No.: 14321.29.1

Filing Date: December 5, 2003

Group: 2673

Confirmation No.: 9118

For: INPUT DEVICE OF 3-D TRANSLATION AND ROTATION AND ITS
METHOD AND RECORDING MEDIUM

INFORMATION DISCLOSURE CITATIONS MADE BY APPLICANT

U.S. Patent Documents

<u>Examiner Initial*</u>	<u>Patent Number</u>	<u>Issue Date</u>	<u>Name</u>	<u>Class</u>	<u>Sub Class</u>	<u>Filing Date</u>
_____ A1.	6,300,931	10/2001	Someya, et al.	345	102	
_____ A2.	5,805,196	09/1998	Nakanishi, et al.	347	230	
_____ A3.	5,432,526	07/1995	Hyatt, Gilbert P.	345	87	
_____ A4.	5,227,985	07/1993	DeMenthon, Daniel F.	702	153	
_____ A5.	6,064,423	05/2000	Geng, Sheng Jason	348	36	
_____ A6.	5,546,327	08/1996	Hattori, et al.	702	57	

Foreign Patent Documents

<u>Examiner Initial*</u>	<u>Document Number</u>	<u>Publ. Date</u>	<u>Country or Patent Office</u>	<u>Translation</u>
_____ A7.	06-300542	10/28/94	Japan	No
_____ A8.	07-270124	10/20/94	Japan	No
_____ A9.	08117448	5/4/1996	Japan	No

Examiner:

Date Considered:

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

EXPRESS MAIL LABEL NO.: EV 566 183 413

Form PTO-1449

Sheet 2 of 4

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For: INPUT DEVICE OF 3-D TRANSLATION AND ROTATION AND ITS
METHOD AND RECORDING MEDIUM

_____ A10.	08278846	10/22/1996	Japan	No
_____ A11.	11219253	08/10/1999	Japan	No
_____ A12.	11249806	09/17/1999	Japan	No

Other Documents

(including author (if listed), title, relevant pages, date of publication including at least month and year).

Examiner

Initial*

_____ A13.	Koichiro Deguchi, <i>A Unified Approach to PnP Camera Calibration Problem by Projective Geometry</i> , "Computer Vision '90" Symposium, pp. 41-50, August 1990.
_____ A14.	Robert J. Holt et al., <i>Camera Calibration Problem: Some New Results</i> , Computer Vision, Graphis, and Image Processing: Image Understanding, Vol. 54, No. 3, pp. 368-383, 1991.
_____ A15.	Robert M. Haralick et al., <i>Analysis and Solutions of the Three Point Perspective Pose Estimation Problem</i> , IEEE, Proc. CVPR91, pp. 592-598, 1991.
_____ A16.	Juyang Weng, et al., <i>Camera Calibration with Distortion Models and Accuracy Evaluation</i> , IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 14, No. 10, pp. 965-980, October 1992.

Examiner:

Date Considered:

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

EXPRESS MAIL LABEL NO.: EV 566 183 413

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Sheet 3 of 4

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Filing Date: December 5, 2003

Group: 2673

Confirmation No.: 9118

For: INPUT DEVICE OF 3-D TRANSLATION AND ROTATION AND ITS
METHOD AND RECORDING MEDIUM

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- _____ A17. Yoshiko Nomura et al., *Simple Calibration Algorithm for High-Distortion-Lens Camera*, IEEE Transactions on Pattern Analysis and Machine Intelligence, Vol. 14, No. 11, pp. 1095-1099, November 1992.
- _____ A18. Koichi Kato et al., *Camera Calibration by Projection of Elliptic Cone Method*, The Institute of Electronics, Information and Communication Engineers, Technical Report of IEICE, PRU94-112, pp. 39-46, 1995.
- _____ A19. English translation of Japanese Patent Publication No. 09325007 A, published December 10, 1997.

Examiner:

Date Considered:

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

EXPRESS MAIL LABEL NO.: EV 566 183 413

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Sheet 4 of 4

Applicant: Koichi Kato, et al.

Serial No.: 10/728,997

Att'y Docket No.: 14321.29.1

Filing Date: December 5, 2003

Group: 2673

Confirmation No.: 9118

For: INPUT DEVICE OF 3-D TRANSLATION AND ROTATION AND ITS
METHOD AND RECORDING MEDIUM

References Cited by Applicants

While the filing of Information Disclosure Statements is voluntary, the procedure is governed by the guidelines of Section 609 of the Manual of Patent Examining Procedure and 37 C.F.R. §§ 1.97 and 1.98. To be considered a proper Information Disclosure Statement, Form PTO-1449 shall be accompanied by a copy of each listed patent or publication or other item of information and a translation of the pertinent portions of foreign documents (if an existing translation is readily available to the applicant), an explanation of relevance of each reference not in the English language, and should be submitted in a timely manner as set out in MPEP Sec. 609.

Examiners will consider all citations submitted in conformance with 37 C.F.R. § 1.98 and MPEP Sec. 609 and place their initials adjacent the citations in the spaces provided on this form. Examiners will also initial citations not in conformance with the guidelines which may have been considered. A reference may be considered by the Examiner for any reason whether or not the citation is in full conformance with the guidelines. A line will be drawn through a citation if it is not in conformance with the guidelines AND has not been considered. A copy of the submitted form, as reviewed by the Examiner, will be returned to the applicant with the next communication. The original of the form will be entered into the application file.

Each citation initialed by the Examiner will be printed on the issued patent in the same manner as references cited by the Examiner on Form PTO-892.

The reference designations "A1," "A2," etc. (referring to Applicant's reference 1, Applicant's reference 2, etc.) will be used by the Examiner in the same manner as Examiner's reference designations "A," "B," "C," etc. on Office Action Form PTO-1142.

AHM0000000180V001

Examiner:

Date Considered:

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.